

We claim:

1. A mapping catheter for use in mapping cardiac electrical potentials of a patient's heart comprising:

- Sub a1*
- a) a set of electrodes;
 - b) first positioning means coupled to said set of electrodes for spacing a portion of said set of electrodes, defined as a first subset of electrodes, apart from and not in contact with a surface of said patient's heart; and
 - c) second positioning means coupled to said set of electrodes for placing a second predetermined subset of said set of electrodes into contact with a surface of said patient's heart, said second predetermined subset being different from said first subset.

2. The apparatus of claim 1 wherein said set of electrodes comprises at least twenty-four electrodes.

3. A catheter assembly for mapping the interior of a patient's heart comprising:

- a) a first set of electrode sites defining a first electrode array;
- b) said electrode array adapted to be positioned within said patient's heart with a substantial number of said electrodes not in contact with said heart; and
- c) a second set of electrode sites adapted to be located in contact with said patient's heart, said second set of electrode sites being different from said first set of electrode sites.

Add B1
Add C1